



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/560,548

01/30/2006

Daniel Dreyer

534P015

1051

42754 7590 04/28/2009
Nields, Lemack & Frame, LLC
176 E. Main Street
Suite #5
Westborough, MA 01581

EXAMINER

RADEMAKER, CLAIRE L

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

04/28/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/560,548	Applicant(s) DREYER ET AL.	
	Examiner CLAIRE L. RADEMAKER	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This office action is in response to the amendment filed on December 23, 2008. Claims 1-22 are pending and are rejected for reasons of record.

Election/Restrictions

2. On page 1 of the Applicant's Response, Applicants state that the Examiner "does not mention the prior restriction requirement, or Applicant's election [of how] to proceed" (Applicant's Response, page 1).

The Examiner has no record of a restriction requirement or response to a restriction requirement (written or verbal). Therefore, the Applicant's are correct that claims 1-22 are pending and being examined.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 19 is rejected under 35 U.S.C. 102(b) as being anticipated by Abbe et al. (US 3,159,507).

Art Unit: 1795

It is noted that claim 19 is considered, and being treated as, an independent claim because it only refers back to claim 1 in a statement of intended use.

A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone (MPEP. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). In claim 19, the intended use of the process for the production of a separator material for forming a separator for a lead acid accumulator of claim 1 is not given patentable weight.

With regard to claims 19, Abbe et al. discloses a process for the production of a separator material for a battery (col. 1, lines 10-15) with the steps:

(a) provision of a microporous sheet (col. 2, lines 37-41 & 56-63 & col. 4, lines 10-27 & 48-52; Figure 7);

(b) provision of at least one second layer (col. 2, lines 37-41, col. 4, lines 10-12, & col. 5, lines 7-10; Figure 7) in the form of a planar fleece material;

(c) location of the at least one second layer on a face of the microporous sheet (col. 4, lines 10-12 & col. 5, lines 7-10; Figure 7); and

(d) bonding / welding / fusing of the at least one planar fleece layer with at least some of the protrusions of the layer / sheet (col. 4, lines 10-12 & col. 5, lines 7-10; Figure 7) such that the fleece layer can be located at least at the level of the surface of

Art Unit: 1795

the base sheet in the area of the welded / fused joints and does not penetrate into this (Figure 7).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-2, 8-16, 18, 20, & 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abbe et al. (US 3,159,507) in view of Zucker (WO 03/026038).

With regard to claims 1-2, 8-16, & 18, Abbe et al. teaches a separator material for a battery (col. 1, lines 10-15), where said separator material for forming a separator comprises a first layer in the form of a microporous sheet (col. 2, lines 37-41 & 56-63 & col. 4, lines 10-27 & 48-52; Figure 7), which can be made of glass fibers and a synthetic resin of hydrophilic character (col. 5, lines 11-16) and can have a number of protrusions / ribs, each defining an area of increased film thickness, on at least one face of a base sheet (col. 4, lines 23-27 & col. 5, lines 7-10; Figure 7), and at least one second layer (col. 2, lines 37-41, col. 4, lines 10-12, & col. 5, lines 7-10; Figure 7) in the form of a planar fleece material which is located on a face of the microporous sheet (col. 4, lines 10-12 & col. 5, lines 7-10; Figure 7), wherein the planar fleece material is bonded to at least some of the protrusions / ribs via welded / fused joints on said protrusions / ribs

Art Unit: 1795

(col. 4, lines 10-12 & col. 5, lines 7-10; Figure 7), and where the fleece material can be located at least at the level of the surface of the base sheet in the area of the welded / fused joints and does not penetrate into this (Figure 7), but fails to specifically state that said separator material can be used in a lead-acid accumulator / lead-acid battery or that said microporous sheet / first layer can be made of a thermoplastic material such as polyethylene with a filler content of silica, has a specified amount of micropores of a specified diameter, and has a specified thickness in areas without protrusions, or the specified composition or thickness of said fleece layer / second layer.

While Abbe et al. fails to specifically state that said separator material can be used in a lead-acid accumulator / lead-acid battery, it is noted a preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone (*In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976); *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951)). In claims 1 & 19, the intended use of said separator material for a lead-acid accumulator / lead-acid battery is not given patentable weight.

Zucker teaches a separator material for forming a separator for a lead-acid accumulator / battery (page 1, paragraph 1), wherein the separator material comprises:

A first layer in the form of a microporous sheet (3, page 6, paragraph 4), which can be made of a thermoplastic material such as polyethylene (page 6, paragraph 4 - page 7, paragraph 1) having a molecular weight of at least

Art Unit: 1795

300,000, a melt index under normal conditions of substantially 0 (zero), and a viscosity number of not less than 600ml/g (page 7, paragraph 1), wherein said polyethylene has a filler content of silica (page 7, paragraph 2), and where said first layer can have a number of protrusions / ribs, each defining an area of increased film thickness, on at least one face of a base sheet (page 11, paragraph 5 - page 12, line 2), where at least 50% of the pores of the first layer have a diameter of 0.5 μ m or less (page 10, paragraph 3), and where said first layer has a thickness of 0.02-0.3mm in areas without protrusions (page 11, paragraph 4 – page 12, paragraph 1); and

At least one second layer (2, page 6, paragraph 2) in the form of a planar fleece material which is located on a face of the microporous sheet (page 16, paragraph 2), where the second layer can substantially consist of glass fibers (page 12, paragraphs 2-3), can substantially consist of polyester fibers (page 12, paragraphs 2 & 4, & page 13, paragraph 1), or a mixture of glass fibers and polyester fibers (page 14, paragraph 2 & page 13, paragraph 1), where the at least one planar fleece layer can be bonded to the microporous sheet by ultrasonic welding / ultrasonic sealing (page 16, paragraph 2), and where the at least one planar fleece layer can have a thickness of 0.2-3.6mm (page 15, paragraph 3).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of said separator comprising (1) a microporous sheet comprising a thermoplastic material of the specified composition (polyethylene) having

Art Unit: 1795

the specified molecular weight, melt index, and viscosity, and (2) a fleece layer substantially consisting of glass, substantially consisting of polyester fibers, or comprising a mixture of glass fibers and polyester fibers, having a thickness of 0.2-3.6mm of Zucker to the separator of Abbe et al. because a separator comprising (1) a microporous sheet comprising a thermoplastic material of the specified composition (polyethylene) having the specified molecular weight, melt index, and viscosity, and (2) a fleece layer substantially consisting of glass, substantially consisting of polyester fibers, or comprising a mixture of glass fibers and polyester fibers, having a thickness of 0.2-3.6mm is known to be an effective separator material / structure and one would have a reasonable expectation of success in doing so.

With regard to claim 20, Abbe et al. fails to specifically state that the bonding / welding that takes place is by means of ultrasonic welding.

Zucker teaches that the at least one planar fleece layer can be bonded / welded to the microporous sheet by ultrasonic welding / ultrasonic sealing (page 16, paragraph 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of bonding / welding the at least one planar fleece layer to the microporous sheet by ultrasonic welding / ultrasonic sealing of Zucker to the method of Abbe et al. because ultrasonic welding / ultrasonic sealing is known to be an effective way to bond / weld a at least one planar fleece layer to a microporous sheet of a battery separator and one would have a reasonable expectation of success in doing so.

With regard to claim 22, as applied to claim 19 or 20 above, Abbe et al. fails to specifically state the thickness of the fleece layer.

Zucker teaches that the at least one planar fleece layer can have a thickness of 0.2-3.6mm (page 15, paragraph 3).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of said separator comprising a fleece layer of the specified thickness of Zucker to the separator of Abbe et al. because a separator comprising a fleece layer having a thickness of 0.2-3.6mm is known to be an effective separator material / structure and one would have a reasonable expectation of success in doing so.

7. Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abbe et al. (US 3,159,507) and Zucker (WO 03/026038), as applied to claims 1-2 above, and further in view of Kawai et al. (US 3,210,218).

The disclosure of Abbe et al. and Zucker as discussed above is fully disclosed herein.

With regard to claims 3-4, modified Abbe et al. fails to teach that the protrusions/ribs run vertically and extend over the entire length of the separator or that the separator comprises outermost ribs in each of the two side edge areas.

Art Unit: 1795

Kawai et al. teaches a battery separator (col. 1, lines 12-13; Figures 1-3) comprising a microporous sheet (2, col. 1, lines 62-70 & col. 4, lines 49-51) which has protrusions / ribs that run vertically and extend over the entire length of the microporous sheet (col. 1, lines 65-70; Figure 2), where said microporous sheet comprises outermost protrusions/ribs in each of the two side edge areas (Figure 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the design of the microporous sheet with protrusions / ribs of Kawai et al. to the microporous sheet with protrusions / ribs of modified Abbe et al. in order to create a battery separator which has high mechanical strength (col. 1, lines 62-70 & col. 3, lines 40-45).

With regard to claims 5-6, modified Abbe et al. fails to teach that the outermost protrusions / ribs can comprise continuous or discontinuous welded joints.

While modified Abbe et al. fails to teach that the outermost protrusions / ribs can comprise continuous or discontinuous welded joints, it would have been obvious to one of ordinary skill in the art that the welded joints could be made continuous in order to provide a better seal or could be made discontinuous in order to decrease manufacturing time and cost.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abbe et al. (US 3,159,507) and Zucker (WO 03/026038), as applied to claims 1-2 above, and further in view of Farahmandi et al. (US 2001/0020319).

Art Unit: 1795

The disclosure of Abbe et al. and Zucker as discussed above is fully disclosed herein.

With regard to claim 7, modified Abbe et al. fails to specifically state that the welded joints can be bonded by spot-welding.

Farahmandi et al. teaches that spot welding and ultrasonic welding are two suitable bonding techniques (paragraph [0235]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of bonding via spot-welding of Farahmandi et al. to the bonding technique of modified Abbe et al. because spot-welding is known to be an effective method of bonding and one would have a reasonable expectation of success in doing so.

Furthermore, it is noted that the product-by-limitations of claim 7 are not given patentable weight since the courts have held that patentability is based on a product itself, even if the prior art product is made by a different process (*In re Thorpe*, 227 USPQ 964, 1985). Moreover, a product-by-process limitation is held to be obvious if the product is similar to a prior art product (*In re Brown*, 173 USPQ 685, and *In re Fessmann*, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Claim 7 as written does not distinguish the product of the instant application from the product of the prior art.

Art Unit: 1795

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abbe et al. (US 3,159,507) and Zucker (WO 03/026038), as applied to claim 16 above, and further in view of Kawai (JP 55-146872).

The disclosure of Abbe et al. and Zucker as discussed above is fully disclosed herein.

With regard to claim 17, modified Abbe et al. fails to teach the concept of the fleece layer comprising a specified amount of glass fibers.

Kawai teaches the concept of a battery separator comprising a mixture of glass fibers and polyethylene fibers in a ratio of 70wt% of glass fiber and 30wt% of polyethylene fiber in order to prevents short circuit at the time of over discharge (abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of having a separator comprise a mixture of glass fibers and polyethylene fibers in a ratio of 70wt% of glass fiber and 30wt% of polyethylene fiber of Kawai to the fleece layer of the separator of modified Abbe et al. in order to produce a separator that prevents short circuit at the time of over discharge (abstract).

10. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abbe et al. (US 3,159,507), as applied to claim 19 above, and further in view of Bohnstedt et al. (US 2003/0129486).

The disclosure of Abbe et al. as discussed above is fully disclosed herein.

With regard to claim 21, Abbe et al. teaches that the planar fleece material is bonded to at least some of the protrusions / ribs via welded / fused joints on said protrusions / ribs (col. 4, lines 10-12 & col. 5, lines 7-10; Figure 7), but fails to specifically state the height of the protrusions.

Bohnstedt et al. teaches the concept of a battery separator having ribs have a height of 0.3-1.3mm, and preferably about 0.5mm (paragraph [0019]) while the base thickness (separator thickness not including the protrusions) is 0.1-0.6mm (paragraph [0017]) in order to reliably maintain electrode distance during use and ensure electrical isolation of the electrode plates (paragraphs [0008] & [0012]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of having ribs of height 0.3-1.3mm, preferably about 0.5mm of Bohnstedt et al. to the separator of Abbe et al. in order to reliably maintain electrode distance during use and ensure electrical isolation of the electrode plates (paragraphs [0008] & [0012]).

11. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abbe et al. (US 3,159,507) and Zucker (WO 03/026038), as applied to claim 20 above, and further in view of Bohnstedt et al. (US 2003/0129486).

The disclosure of Abbe et al. and Zucker as discussed above is fully disclosed herein.

With regard to claim 21, Abbe et al. teaches that the planar fleece material is bonded to at least some of the protrusions / ribs via welded / fused joints on said protrusions / ribs (col. 4, lines 10-12 & col. 5, lines 7-10; Figure 7).

Modified Abbe et al. fails to specifically state the height of the protrusions.

Bohnstedt et al. teaches the concept of a battery separator having ribs have a height of 0.3-1.3mm, and preferably about 0.5mm (paragraph [0019]) while the base thickness (separator thickness not including the protrusions) is 0.1-0.6mm (paragraph [0017]) in order to reliably maintain electrode distance during use and ensure electrical isolation of the electrode plates (paragraphs [0008] & [0012]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of having ribs of height 0.3-1.3mm, preferably about 0.5mm of Bohnstedt et al. to the separator of modified Abbe et al. in order to reliably maintain electrode distance during use and ensure electrical isolation of the electrode plates (paragraphs [0008] & [0012]).

Response to Arguments

Information Disclosure Statement

12. Applicant's arguments with regard to the objections to the Information Disclosure Statement (IDS) regarding references DE 2924-239, DE 3335-547, and EP 0-121-771,

Art Unit: 1795

filed on December 23, 2008, have been fully considered and the Examiner's objections are withdrawn due to the Applicant's amendments and arguments.

Drawings

13. Applicant's arguments, with regards to the Drawings (specifically Figure 2), filed on December 23, 2008, have been fully considered and are persuasive. The objection of Figure 2 has been withdrawn due to the Applicant's amendments and arguments.

Specification

14. Applicant's arguments with regard to the objections to the Specification regarding reference characters "2", "2'", & "3", filed on December 23, 2008, have been fully considered and the Examiner's objections are withdrawn due to the Applicant's amendments and arguments.

Claim Objections

15. Applicant's arguments with regard to the objections to claims 1-6, 13, 19, & 21 regarding reference characters "2" and "2'", typographical errors, the term "weld seams", the use of inconsistent terminology, and improper dependency, filed on December 23, 2008, have been fully considered and the Examiner's objections are withdrawn due to the Applicant's amendments and arguments.

Claim Rejections - 35 USC § 103

16. Applicant's arguments with respect to claims 1-22, filed on December 23, 2008, have been considered but are not persuasive.

On pages 5-6 of the Applicant's Response, Applicants argue that "Abbe [et al.] teaches away from using a polymer material for making the microporous layer as required by Zucker" (Applicant's Response, page 6).

The Examiner respectfully disagrees with the Applicants argument that "Abbe [et al.] teaches away from using a polymer material for making the microporous layer as required by Zucker" (Applicant's Response, page 6) because Abbe et al. clearly teaches that, while glass is preferred, rubber or plastic materials could be used instead of glass with the statement that "the chemical resistance properties and the mechanical properties of glass are more suitable than those of any other material, such as wood, rubber, and plastic materials, heretofore employed for the construction of separating members" (col. 1, lines 60-64). It has been held that "disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments" (MPEP 2123) and that "a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including nonpreferred embodiments" (MPEP 2123).

Conclusion

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLAIRE L. RADEMAKER whose telephone number is (571)272-9809. The examiner can normally be reached on Monday - Friday, 8:00AM - 4:30PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1795

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. L. R./
Examiner, Art Unit 1795

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795